

Trade-Offs between Urban Green Space and Densification: Balancing Outdoor Thermal Comfort, Mobility, and Housing Demand

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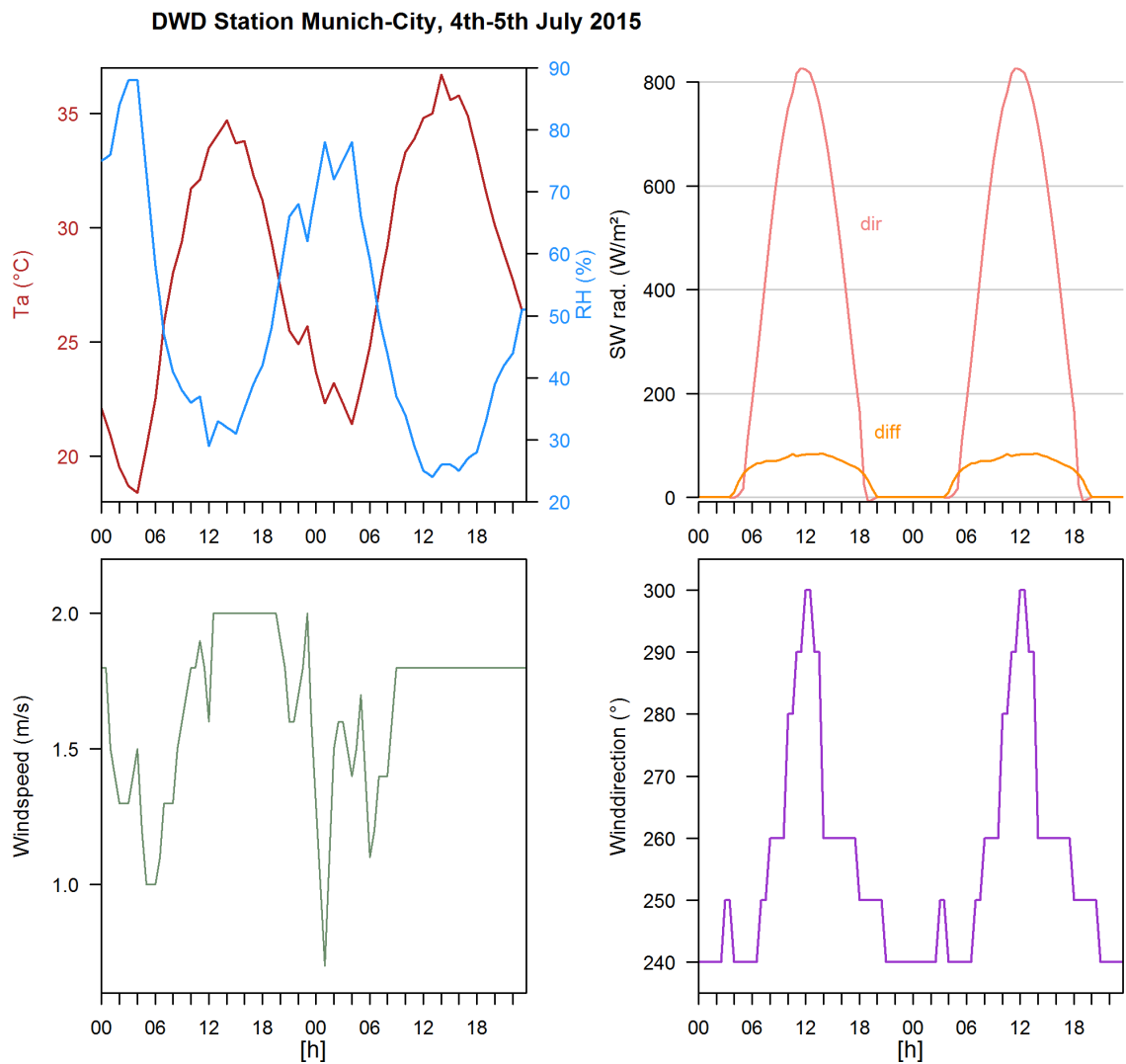
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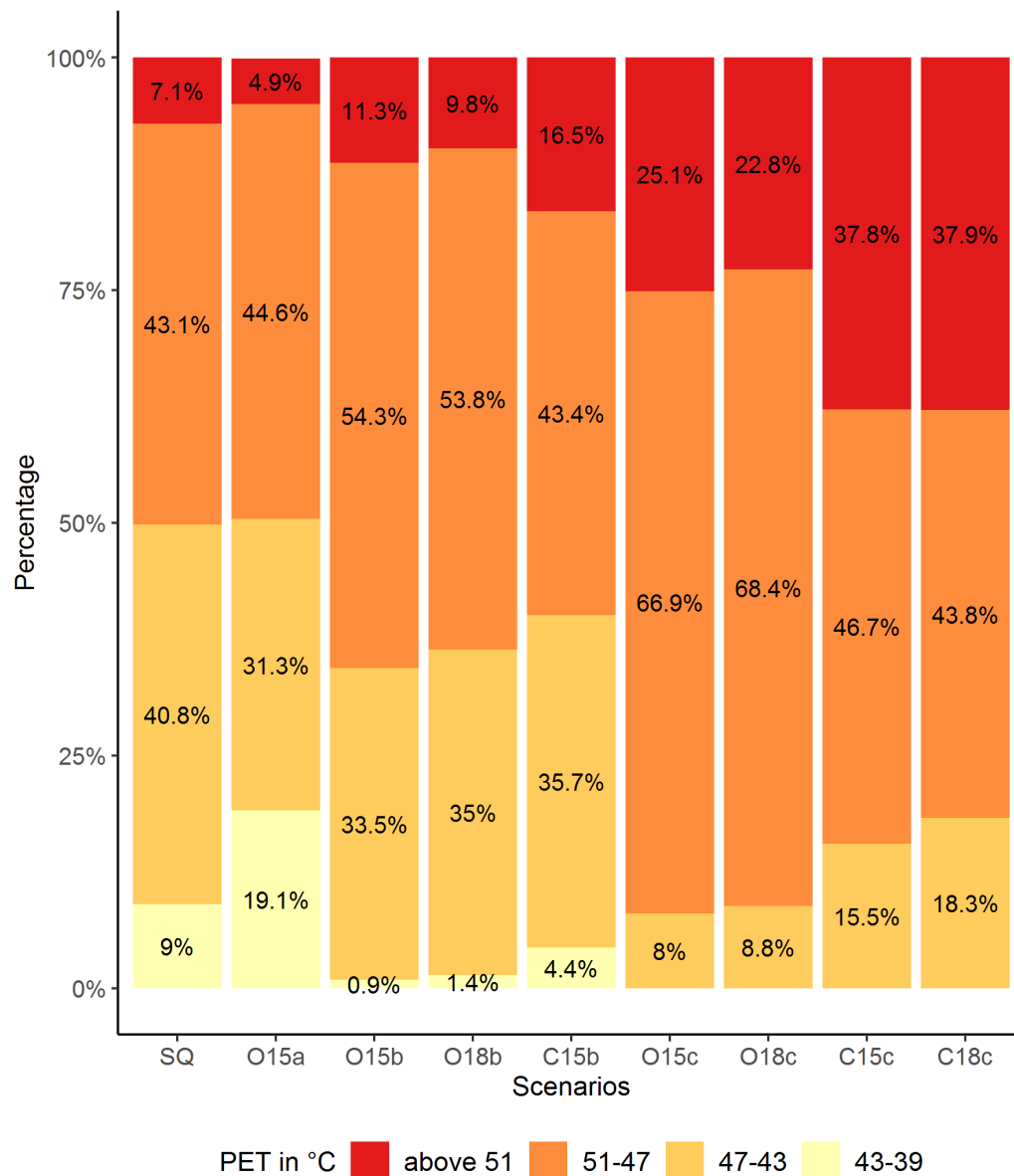
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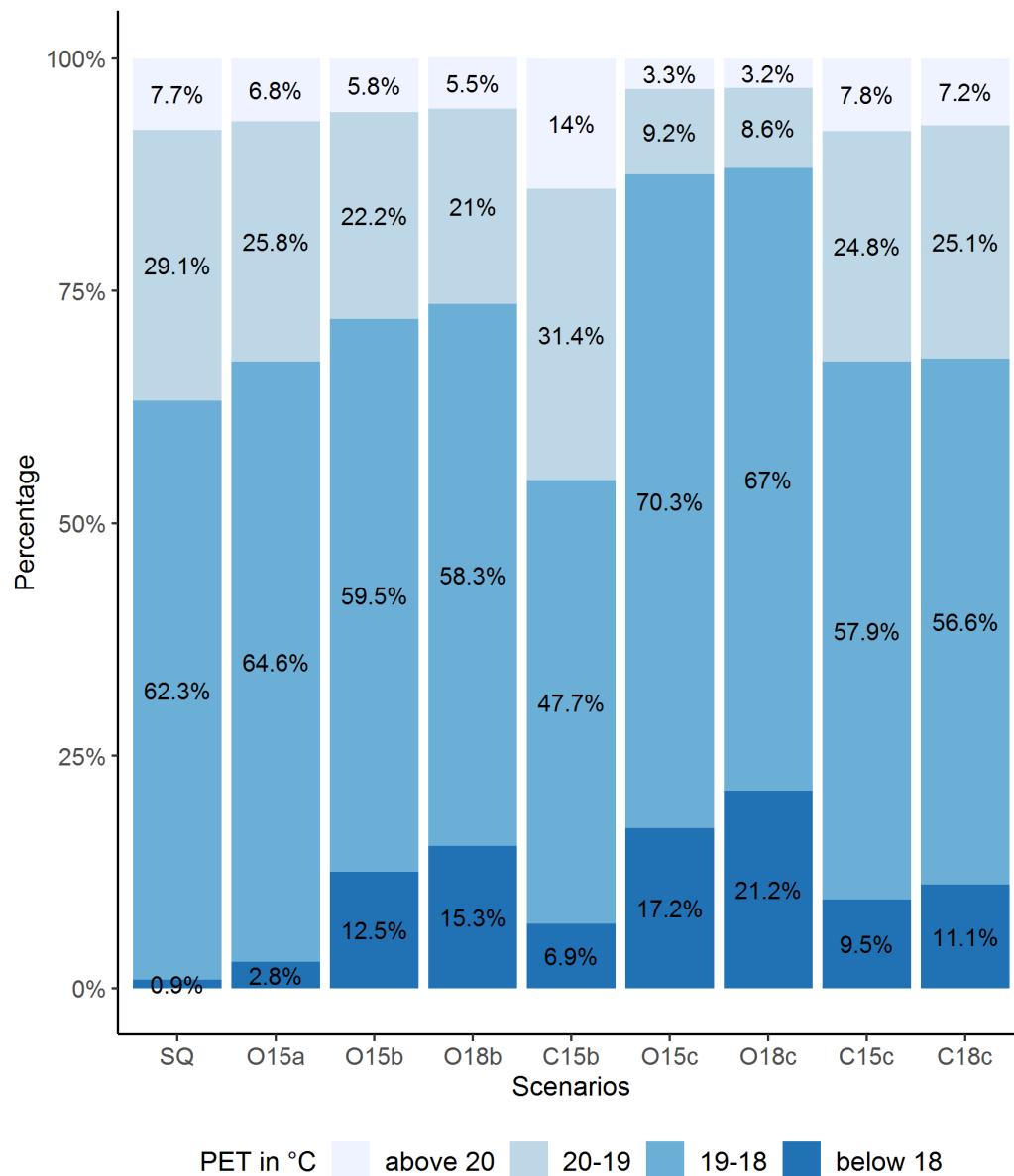
Supplements to article “Trade-offs between urban green space, mobility demands and outdoor thermal comfort in densifying neighbourhoods” (Erlwein and Pauleit)



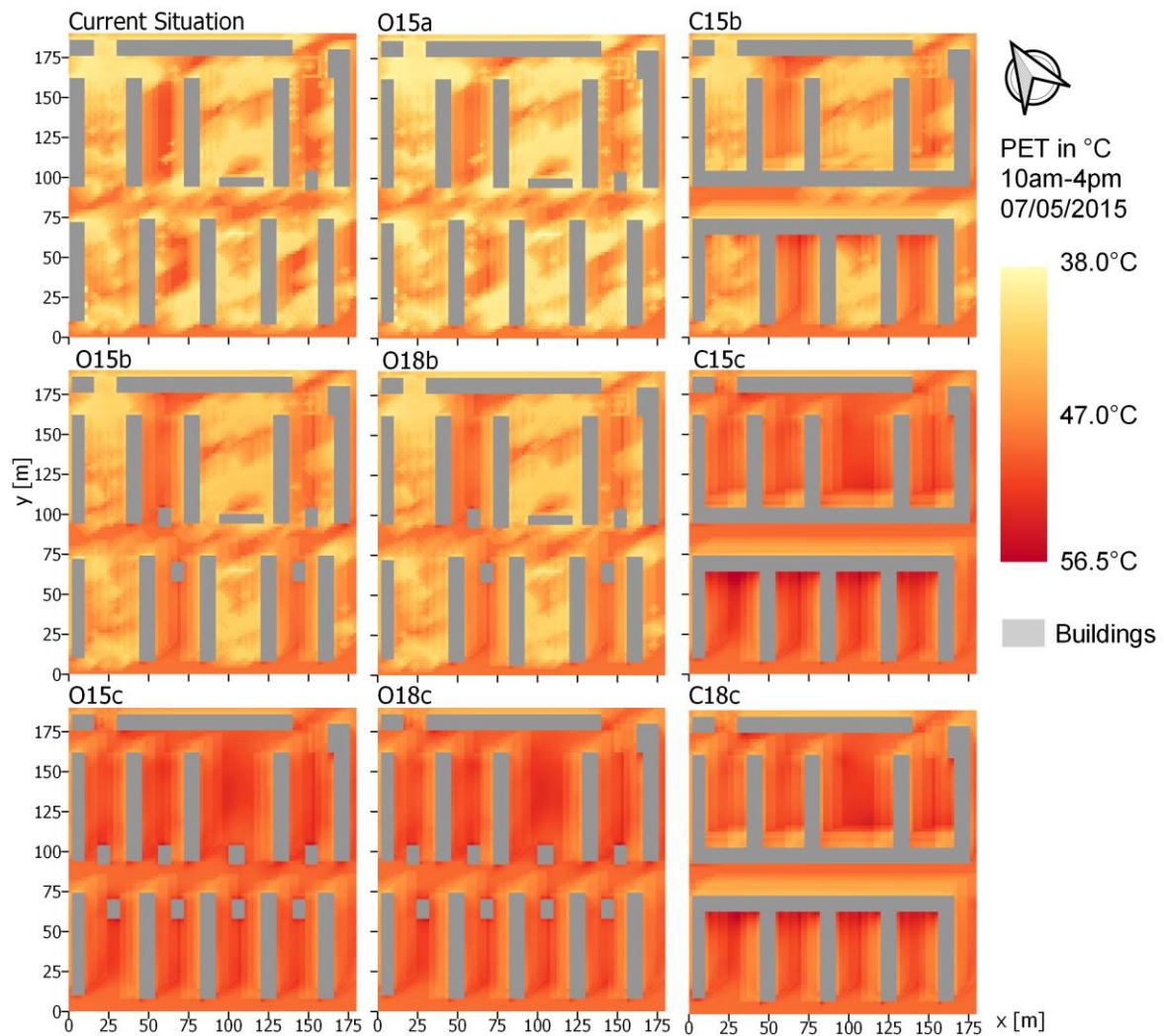
S 1. Meteorological input variables for the ENVI-met simulation 4th-5th July 2015.



S2: Heat distribution (PET) for each scenario at 2 pm, 5th July 2015 represented in stacked barcharts. All percentages refer to the total model area. Labelling of scenarios: O/C = open vs. closed rows, 15/18 m building height, a = one carpark (100% trees), b = 4 carparks (65-53% trees), c = eight carparks (zero trees).



S3: Heat distribution (PET) for each scenario at 4 am, 6th July 2015 represented in stacked barcharts. All percentages refer to the total model area. Labelling of scenarios: O/C = open/closed rows, 15/18 m building height, a = one carpark (100% trees), b = 4 carparks (65-53% trees), c = eight carparks (zero trees).



S4. Simulated PET values 10 am - 4 pm on 5th July 2015 for the current situation and the eight densification scenarios (1.4 m height). (O = open rows, C = closed rows, 15/18 = 15/18 m building height, a/b/c = 1/4/8 underground car parks).

scenario	SVF	Δ SVF	T_{mrt}	ΔT_{mrt}	T_a	ΔT_a	PET	Δ PET
SQ	0.24		54.2		39.2		49.8	
O15a	0.22	-0.02	53.5	-0.7	38.9	-0.3	46.7	-0.5
O15b	0.33	0.09	66.2	12	39.2	0	49.3	2.1
O15c	0.48	0.24	71.3	17.1	40	0.8	49.8	2.6
C15b	0.28	0.04	65.3	11.1	39.4	0.2	49.2	2.0
C15c	0.41	0.17	70.7	16.5	39.2	0	49.8	2.6
C18c	0.38	0.14	70.7	16.5	39.2	0	49.8	2.6
O18b	0.31	0.07	66	11.8	39.7	0.5	49.2	2.0
O18c	0.46	0.22	71.4	17.2	39.9	0.7	49.8	2.6

S5. SVF, average T_{mrt} , T_a , PET results for all scenarios and their relative difference to the base case on 5th July 2015 at 2 pm.

Supplements to Erlwein and Pauleit "Trade-offs between urban green space, mobility demands and outdoor thermal comfort in densifying neighbourhoods"